Appl. No.: 10/709,690
Amdt. Dated: 10/28/2007
Reply to Office action of: 08/08/2007

AMENDMENTS TO THE DRAWINGS:

No amendments to the drawings are being presented herewith.

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REMARKS/ARGUMENTS

Claims 1 – 15 remain in this application. Claims 1 – 3 and 5 – 15 have been amended to remove the parenthesized phrases and correct other claim informalities and typographical and minor grammatical errors.

No new matter has been introduced by these amendments to the claims.

Claims 1 – 15 have been objected to because of informalities. Specifically, the Examiner states:

> Any limitation(s) within parentheses such as "1, 2, 3, 4", "10, 20, 30, 40" "START", "SYNC", "according to the number slave devices present in the system" in claims 1 and 2 and so on are not considered. Applicant is advised to either cancel the limitations within the parentheses or take out from the parentheses. It is also unnecessary to put numbers in the claims while they are clearly shown in the specification or drawings. They create confusion with the citations that would be given from prior art references.
>
> Claim 6 recites the limitation "packet (10, 20, 30, 40)" in line 3. It is assumed packets P1, P2, P3, P4.
>
> The limitation "slave devices" and "slave circuits" are inconsistently used in the claims, e.g. see claims 1. Appropriate correction is required.

By this amendment Applicants have corrected the informalities identified by the Examiner. Clearly, these objections are now moot and Applicant respectfully requests these objections be removed.

Claims 7 and 12 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner states:

> Claim 7 recites the limitation "said short time interval" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.
>
> Claim 12 recites the limitation "...by the same" in line 6. It is unclear what is claimed. For the purpose further examination, it is considered as "...by the slave devices"

Applicant respectfully traverses this rejection. By this amendment the phrase "said short time interval" in claim 7 and "...by the same" in claim 12 have been removed.

In view of this amendment to claims 7 and 12 this rejection is now moot and Applicant asks that it be removed.

Claims 1 – 3, 5 – 6, 8 – 10, 12 and 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Harris (US 4,937,811) in view of Hansen (WO 94/26558). Specifically, the Examiner states:

> **Regarding claim 1**, Harris discloses a distributed system for acquiring remote data in packets with a communication protocol optimizing the transmission speed (Figs. 6, 7 and 8), particularly applicable to the follow-up and control in an automotive vehicle of the values of signals provided by a series of transducer devices (1, 2, 3, 4) distributed in different parts of the vehicle and which follow different analog or digital values (Fig. 8, col. 3, lines 19 – 25; col. 7, lines 53 – 59, 64 – 66; col. 4, lines 7 – 13, explaining the messages or signals are associate with sensors or components of the automobile, such as switches, lamps motors, consoles, control doors, control trunk functions and so on), characterized in that said transducer devices (1, 2, 3, 4) are associated to respective slave/subordinate circuits (10, 20, 30, 40) which are connected, through a single, time-shared serial communications bus (60), to a master/main circuit (50) (Figs. 6 and 8; col. 7, lines 6 – 7; 52 – 59, illustrate slaves are coupled to a master control via a communication network such as 113, and the slaves are associated to components of the automobile), which in turn is connected to a digital processing unit (DP) through a parallel bus (70) (Figs. 6 and 8; col. 7, lines 7 – 9, 50 – 52, explain the system microprocessor, such as 110 and/or 150, is coupled to the master controller via gthe parallel interface buses or links), each one of said slave circuits (10, 20, 30, 40) and master circuit (50) being provided with a respective digital processor (SLV1, SLV2, SLV3, SLV4, MST) and a respective transceiver device (11, 21, 31, 41, 51)(Figs. 1, 2, 3 and 8; col. 3, lines 41 – 50; col. 3, line 65 – col. 4, line 16; col. 7, lines 36 – 38, the master line interface module such as 10 and slave line interface module 40 include controllers or processors, transmitters and receivers), and which master circuit (50) is provided so as to perform, upon petition of an activation by said unit (DP), a repetitive

or non-repetitive consultation, setting up communication with each one of the slave/subordinate circuits (10, 20, 30, 40) according to a communication protocol without error correction which includes a series of bit packets (P1, P2, P3, P4) (Figs. 6 and 8; col. 7, lines 50 – 53; col. 5, lines 6 – 9, lines 60 – 63, explains the microprocessor is communicated through the master controller. It is also obvious for processor to control, order and/or consult the devices such as the master and slaves to with each other), lines, each one of which comprises: a start bit (START) with a longer duration/length than the data bits so that it is fully identified (Fig. 5; col. 5, lines 63 – 68, the start bit and the P/C bit can be considered as one (START) because the P/C identifies the message type same as the applicant point it out, thus longer (twice) in duration. Note that the duration of bit type can be changed based on the clocks, and is a design chiose); one or more (according to the number of slave devices present in the system) address bits (A1, A0), indicative of the slave/subordinate device (10, 20, 30, 40) to be consulted (Fig. 5; col. 5, line 68 – col. 6, line 1); and several data bits (D0...Dn) containing information coming from the consulted slave device (10, 20, 30, 40) (Fig. 5; col. 6, lines 1 – 2).

Harris doesn't 1.5 delay/synchronism bits (SYNC) for the frames going from master to slave.

Hansen teaches sync bits for the packet going from master to slave (see Figs. 5a and 6a, as explained above, the duration of the sync bits can be changed. As can be shown from the figs. The sync bits is twice than the data bits. However, it can be easily changed to 1.5 by chaning the duration of the clock or the pulse of the specified bit type(s)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include sync bits into a frame as taught by Hansen, and incorporate it inot the frame format of Harris inorder to settle and/or act as a time in which the system as a whole to synchronise, read for another command fransmission//reply.

Regarding claims 2 and 3, Harris discloses said start bit (START) of each bit packet (P1, P2, P3, P4), with a longer duration/length, at least two times, than the data

bits each of the packets, is provided so as to generate a reinitialization of all the slave circuits (10, 20, 30, 40) (Fig. 5; col. 5, lines 63 – 68, the start bit and the P/C bit can be considered as one (START) because the P/C identifies the message type same as the applicant points it out, thus longer (twice) in duration. Note that the duration of fit type can be changed based on the clocks, and is a design choise).

Regarding claims 5 and 6, Harris discloses each bit packet (P1, P2, P3, P4) includes an additional last protocol error detection bit (DET) in the data field or address field (Fig. 5, col. 6, lines 2 – 4, each of the frames such as the one shown in fig. 5 include error detection or CRC. A stop bit is included as a last bit, however it is obvious to put the error detection bit as the last bit and the receiver know it is the last bit).

Regarding claims 8 and 9, Harris discloses said serial bus (60) is formed by a twisted differential cable comprising two twisted or single insulated copper conductor(s) (61, 62) in shunt with a ground line (64) (col. 2, lines 9 – 12; col. 4, lines 31 – 36, explains in order to cancel interferences a pair of twisted pair of communication network or bus 113 is used. It would also obvious and well known to use a single copper conductor wire shunt with ground line).

Regarding claim 10, Harris discloses each one of those transducer devices (1, 2, 3, 4,) providing an analog signal is associated to an A/D converter (12, 22, 32, 42) connected to the corresponding slave-transceiver circuit (SLV1 – 11, SLV2 – 21, SLV3 – 31, SLV4 – 41) (col. 6, lines 29 – 38).

Regarding claim 12, Harris discloses each bit packet (P1, P2, P3, P4) contains, in addition to said one or more address bits (A1, A0), data bits (10 – 1n) susceptible to being transmitted from the master circuit (50) to the consulted slave circuit (10, 20, 30, 40), such that they are univocally recognized by the same (Fig. 5; col. 5, line 68 – col. 6, line 1, it clearly shows the address bits are more than two bits such that the slaves would identify the message.

Regarding claim 13, the claimed process includes the same features as the rejected claim 1 except now the interruption signal that indicate the end of consultation

> order is sent from the master to the processor while still the master communicates with the slaves. Hansen suggests the system can work using an interruption function but that is considered to be expensive (page 13, lines 0 – 16). And it is obvious for a system to perform multiple functions through a multi-task processor. That is, it is obvious for the master to send interrupt instruction or signal while communicating with the slaves to increase the communication speed of the system.

Applicant respectfully traverses these rejections. The key to Applicant's invention is providing a data distribution system and data acquisition in packets with a communication protocol that optimizes transmission speed using digital processing units in both the master and slave circuits having two-way communication via a single time-shared communications serial bus. This communication may be either a repetitive or non-repetitive communication frame circulating through the time-shared serial bus formed by a series of bit packets, each separated by a short time interval.

A fair reading of the Harris (US 4,937,811) reference discloses a communication network comprising master and slave devices all of which require transformers for each input and output port (see for example, Col. 1, line 50 – Col. 2, line 9; Col. 3, lines 41 -- 64) and a separate twisted pair cabling for each such device (see for example, Col. 2, lines 10 – 12; Col. 4, lines 28 -- 37). This reference also teaches the criticality of both clockwise and counterclockwise data transmission is required to assure continued operation of some slave devices if at least one of said slave devices becomes inoperative (see for example, Col. 2, lines 19 – 25; Col. 4, line 64 – Col. 5, line 18). The Harris (US 4,937,811) reference also requires that the communication have the form of a start-bit, message type-bit, data- bits, CRC-bits, and stop-bit (see for example, Col. 5, line 60 – Col. 6, line 6). There is not teaching of altering the composition of the transmission format within a frame. The Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the use of a common serial bus for connecting the slaves to the master. Clearly, when viewed in this light the Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Hansen (WO 94/26558) reference discloses a vehicle communication control system that is preferably located in the middle area of a vehicle to optimize data speed by physically eliminating connection wiring distances from a master to all slaves (see for example, Abstract). This reference teaches the use of a network

TREE to eliminate the number of wires required in a traditional vehicle wiring harness (see for example, Page 11, lines 9 – 16). The Hansen (WO 94/26558) reference also teaches that the use of microprocessors is undesirable and therefore provides a method of eliminating them (see for example, Page 13, lines 9 – 12) which also removes the need for an interrupt function required in the Harris (US 4,937,811) reference for example. Clearly, when viewed in this light the Hansen (WO 94/26558) reference does not disclose, teach, or fairly suggest the claimed invention.

Thus, the Harris (US 4,937,811) reference teaches the critical need of twisted pair connections between each slave device and the master device whereas the Hansen (WO 94/26558) reference teaches away from such individual slave/master connections. The Hansen (WO 94/26558) reference teaches the desirability of eliminating the need for microprocessors whereas the Harris (US 4,937,811) reference requires them.

Clearly, when viewed in this light no combination of the Harris (US 4,937,811) and Hansen (WO 94/26558) references disclose, teach, or fairly suggest Applicant's claimed invention.

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Harris in view of Hansen as applied to claim 1 above, and further in view of Wang (US 6,507,158 B1). Specifically, the Examiner states:

> **Regarding claim 4**, Harris discloses each bit of the packet has address, data or error detection functions (see Fig. 5, "ADDR: and "CRC"). However, Harris doesn't discloses each of the bits is encoded in Manchester format.
>
> Wang teaches each of the bits is encoded in Manchester format (col. 2, lines 7 – 23, explains each of the bits such as the START, address, and error detection bits are encoded using Manchester coding scheme.
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Manchester coding scheme, known as bi-phase coding, to encode each of the bit types as taught by Wang into the communication system of Harris so that high bit rate operation can be accomplished.

Applicant respectfully traverses these rejections. The key to Applicant's invention, as mentioned above, is providing a data distribution system and data acquisition in packets with a communication protocol that optimizes transmission speed

using digital processing units in both the master and slave circuits having two-way communication via a single time-shared communications serial bus. This communication may be either a repetitive or non-repetitive communication frame circulating through the time-shared serial bus formed by a series of bit packets, each separated by a short time interval.

A fair reading of the Harris (US 4,937,811) reference, as mentioned above, discloses a communication network comprising master and slave devices all of which require transformers for each input and output port (see for example, Col. 1, line 50 – Col. 2, line 9; Col. 3, lines 41 -- 64) and a separate twisted pair cabling for each such device (see for example, Col. 2, lines 10 – 12; Col. 4, lines 28 -- 37). This reference also teaches the criticality of both clockwise and counterclockwise data transmission is required to assure continued operation of some slave devices if at least one of said slave devices becomes inoperative (see for example, Col. 2, lines 19 – 25; Col. 4, line 64 – Col. 5, line 18). The Harris (US 4,937,811) reference also requires that the communication have the form of a start-bit, message type-bit, data- bits, CRC-bits, and stop-bit (see for example, Col. 5, line 60 – Col. 6, line 6). There is not teaching of altering the composition of the transmission format within a frame. The Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the use of a common serial bus for connecting the slaves to the master. Clearly, when viewed in this light the Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Hansen (WO 94/26558) reference, as mentioned above, discloses a vehicle communication control system that is preferably located in the middle area of a vehicle to optimize data speed by physically eliminating connection wiring distances from a master to all slaves (see for example, Abstract). This reference teaches the use of a network TREE to eliminate the number of wires required in a traditional vehicle wiring harness (see for example, Page 11, lines 9 – 16). The Hansen (WO 94/26558) reference also teaches that the use of microprocessors is undesirable and therefore provides a method of eliminating them (see for example, Page 13, lines 9 – 12) which also removes the need for an interrupt function required in the Harris (US 4,937,811) reference for example. Clearly, when viewed in this light the Hansen (WO 94/26558) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Wang (US 6,507,158 B1) reference discloses that within the DALI standard for automated control of electrical lighting digital control systems useable for use in buildings the data can be coded in form of the Manchester protocol (see for example, Col. 1, lines 19 – 25; Col. 2, lines 7 – 23). In addition, the form of the Manchester protocol requires the use of two stop-bits to produce the necessary control (see for example, Col. 2, lines 7 – 23). This reference further teaches one how to remove a single light fixture from the digital controller and make is a manually controlled light fixture by changing the length of the data signal above or below a predetermined level (see for example, Col. 3, line 64 – Col. 4, line 5). This reference does not disclose, teach, or suggest to one skilled in the pertinent art how to provide suitable coding for a vehicle digital control system. In fact, without prior knowledge of the claimed invention there is no impetus in any of the references to look to building lighting control systems for a coding protocol. Clearly, when viewed in this light the Wang (US 6,507,158 B1) reference does not disclose, teach, or fairly suggest Applicants' claimed invention.

Thus, the Harris (US 4,937,811) reference teaches the critical need of twisted pair connections between each slave device and the master device whereas the Hansen (WO 94/26558) reference teaches away from such individual slave/master connections. The Hansen (WO 94/26558) reference teaches the desirability of eliminating the need for microprocessors whereas the Harris (US 4,937,811) reference requires them. And the Wang (US 6,507,158 B1) reference does not provide anything for use in automobiles or digital control systems for automobiles without first having knowledge of Applicants' claimed invention.

Clearly, when viewed in this light no combination of the Harris (US 4,937,811), Hansen (WO 94/26558) and Wang (US 6,507,158 B1) references disclose, teach, or fairly suggest Applicant's claimed invention.

Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Harris in view of Hansen as applied to claim 1 above, and further in view of Momona (US 5,440,555). Specifically, the Examiner states:

> **Regarding claim 7**, Harris discloses messages or packets from/to the slave/master devices. However, Harris doesn't explicitly disclose a short time interval (t1) of separation between bit packets (P1, P2, P3, P4) circulating

> through the serial bus (60) is comprised within a range of 0 to 1 bit.
>
> Momona teaches said short time interval (t1) (guard time) of separation between bit packets (P1, P2, P3, P4) circulating through the serial bus (60) is comprised within a range of 0 to 1 bit (col. 4, lines 30 – 34).
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the guard time of non-transmission bit (which is a time within a range of 0 to 1 bit) as taught by Momona between the message formats of Harris so that an overlap of the messages or the frames tramsmitted from the different slaves would be prevented.

Applicant respectfully traverses these rejections. The key to Applicant's invention, as mentioned above, is providing a data distribution system and data acquisition in packets with a communication protocol that optimizes transmission speed using digital processing units in both the master and slave circuits having two-way communication via a single time-shared communications serial bus. This communication may be either a repetitive or non-repetitive communication frame circulating through the time-shared serial bus formed by a series of bit packets, each separated by a short time interval.

A fair reading of the Harris (US 4,937,811) reference, as mentioned above, discloses a communication network comprising master and slave devices all of which require transformers for each input and output port (see for example, Col. 1, line 50 – Col. 2, line 9; Col. 3, lines 41 -- 64) and a separate twisted pair cabling for each such device (see for example, Col. 2, lines 10 – 12; Col. 4, lines 28 -- 37). This reference also teaches the criticality of both clockwise and counterclockwise data transmission is required to assure continued operation of some slave devices if at least one of said slave devices becomes inoperative (see for example, Col. 2, lines 19 – 25; Col. 4, line 64 – Col. 5, line 18). The Harris (US 4,937,811) reference also requires that the communication have the form of a start-bit, message type-bit, data- bits, CRC-bits, and stop-bit (see for example, Col. 5, line 60 – Col. 6, line 6). There is not teaching of altering the composition of the transmission format within a frame. The Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the use of a common serial bus for

connecting the slaves to the master. Clearly, when viewed in this light the Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Hansen (WO 94/26558) reference, as mentioned above, discloses a vehicle communication control system that is preferably located in the middle area of a vehicle to optimize data speed by physically eliminating connection wiring distances from a master to all slaves (see for example, Abstract). This reference teaches the use of a network TREE to eliminate the number of wires required in a traditional vehicle wiring harness (see for example, Page 11, lines 9 – 16). The Hansen (WO 94/26558) reference also teaches that the use of microprocessors is undesirable and therefore provides a method of eliminating them (see for example, Page 13, lines 9 – 12) which also removes the need for an interrupt function required in the Harris (US 4,937,811) reference for example. Clearly, when viewed in this light the Hansen (WO 94/26558) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Momona (US 5,440,555) reference discloses a method of using empty frame time to send additional data packets and allocates the reception of data and speed from multiple slaves to prevent collision of data from different slaves sent at the same time (see for example, Abstract; Col. 2, line 50 – Col. 3, line 9). To accomplish this burst signals utilizing guard time bit(s) and CRC bit(s) are used (see for example, Col. 4, lines 30 – 49). This reference also teaches the use of fiber optic lines to connect slaves to the master (see for example, Col. 5, lines 43 – 53). The Momona (US 5,440,555) reference also teaches a very elaborate system to allow the master to allocate unused portions of frames and how to retrieve the multiple data within a frame (see for example, Col. 5, line 54 – Col. 6, line 12). A allocation system not used or even suggested by either the Harris (US 4,937,811) reference or the Hansen (WO 94/26558) reference.

Thus, the Harris (US 4,937,811) reference teaches the critical need of twisted pair connections between each slave device and the master device whereas the Hansen (WO 94/26558) reference teaches away from such individual slave/master connections. The Hansen (WO 94/26558) reference teaches the desirability of eliminating the need for microprocessors whereas the Harris (US 4,937,811) reference requires them. The Momona (US 5,440,555) reference teaches the use of optic fiber connections between the slaves and master as well as the need for very elaborate coding to allow multiple data

messages to be combined and decoded from within a single frame. None of these references provide the necessary impetus to combine them or even to look to such varied arts without first having knowledge of Applicants' claimed invention.

Clearly, when viewed in this light no combination of the Harris (US 4,937,811), Hansen (WO 94/26558) and Momona (US 5,440,555) references disclose, teach, or fairly suggest Applicant's claimed invention.

Claim 11 was rejected under 35 U.S.C. 103(a) as being unpatentable over Harris in view of Hansen as applied to claim 1 above, and further in view of Enders et al. (US 6,805,375 B2). Specifically, the Examiner states:

> **Regarding claim 11**, Harris discloses a digital processing unit or microprocessor (Figs. 6 and 8, 110 or 150). However Harris doesn't disclose said digital processing unit (DP) is linked to another bus of the vehicle, such as a CAN or other type of bus.
>
> Enders teaches said digital processing unit (DP) is linked to another bus of the vehicle, such as a CAN or other type of bus (Figs. 1 and 4; col. 3, lines 9 – 12; col. 5, lines 31 – 32).
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to link the processor to another part of the vehicle using CAN as taught by Enders for significant weight savings, reliability, ease of manufacture, and increased options for on-board diagnostics.

Applicant respectfully traverses these rejections. The key to Applicant's invention, as mentioned above, is providing a data distribution system and data acquisition in packets with a communication protocol that optimizes transmission speed using digital processing units in both the master and slave circuits having two-way communication via a single time-shared communications serial bus. This communication may be either a repetitive or non-repetitive communication frame circulating through the time-shared serial bus formed by a series of bit packets, each separated by a short time interval.

A fair reading of the Harris (US 4,937,811) reference, as mentioned above, discloses a communication network comprising master and slave devices all of which require transformers for each input and output port (see for example, Col. 1, line 50 –

Col. 2, line 9; Col. 3, lines 41 -- 64) and a separate twisted pair cabling for each such device (see for example, Col. 2, lines 10 – 12; Col. 4, lines 28 -- 37). This reference also teaches the criticality of both clockwise and counterclockwise data transmission is required to assure continued operation of some slave devices if at least one of said slave devices becomes inoperative (see for example, Col. 2, lines 19 – 25; Col. 4, line 64 – Col. 5, line 18). The Harris (US 4,937;811) reference also requires that the communication have the form of a start-bit, message type-bit, data- bits, CRC-bits, and stop-bit (see for example, Col. 5, line 60 – Col. 6, line 6). There is not teaching of altering the composition of the transmission format within a frame. The Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the use of a common serial bus for connecting the slaves to the master. Clearly, when viewed in this light the Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Hansen (WO 94/26558) reference, as mentioned above, discloses a vehicle communication control system that is preferably located in the middle area of a vehicle to optimize data speed by physically eliminating connection wiring distances from a master to all slaves (see for example, Abstract). This reference teaches the use of a network TREE to eliminate the number of wires required in a traditional vehicle wiring harness (see for example, Page 11, lines 9 – 16). The Hansen (WO 94/26558) reference also teaches that the use of microprocessors is undesirable and therefore provides a method of eliminating them (see for example, Page 13, lines 9 – 12) which also removes the need for an interrupt function required in the Harris (US 4,937,811) reference for example. Clearly, when viewed in this light the Hansen (WO 94/26558) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Enders et al. (US 6,805,375 B2) reference discloses for the wireless transmission of a trigger signal having a double redundant path to ensure reliable triggering of a restraint system in a vehicle (see for example, Abstract; Col. 2, lines 30 – 37). While this reference does teach that the wireless system can be connected to a vehicle wiring harness such as a CAN bus (see for example, Col. 3, lines 9 – 23) the operation of the restraint triggering is solely accomplished by a wireless transmission system (see for example, Col. 3, line 34 – Col. 4, line 41). The Enders et al. (US 6,805,375 B2) reference does not disclose, teach, or fairly suggest to one skilled in the art how to provide wired communication between slaves and masters to accomplished the

execution of some process such as for example, opening a window. Furthermore, because operations such as locking a door lock or opening a window are not as critical or potentially dangerous as a false triggering of a restraint there is no need for a double redundant operation triggering system.

Thus, the Harris (US 4,937,811) reference teaches the critical need of twisted pair connections between each slave device and the master device whereas the Hansen (WO 94/26558) reference teaches away from such individual slave/master connections. The Hansen (WO 94/26558) reference teaches the desirability of eliminating the need for microprocessors whereas the Harris (US 4,937,811) reference requires them. The Enders et al. (US 6,805,375 B2) reference teaches the criticality of using a wireless transmission system and a double redundant operation execution schema. None of these references provide the necessary impetus to combine them or even to look to such varied arts without first having knowledge of Applicants' claimed invention.

Clearly, when viewed in this light no combination of the Harris (US 4,937,811), Hansen (WO 94/26558) and Enders et al. (US 6,805,375 B2) references disclose, teach, or fairly suggest Applicant's claimed invention.

Claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable over Harris in view of Hansen as applied to claim 13 above, and further in view of Go et al. (US 5,305,355). Specifically, the Examiner states:

> **Regarding claim 14,** Harris discloses communication between master control or circuit and slave circuits, and the communication is contolled or imposed by the microprocessor. However, Harris doesn't disclose said consultation cycles between master circuit (50) and slave circuits (10, 20, 30, 40) and acquisition of data stored in the master circuit (50) from the digital processing unit (DP) are carried out cyclically at a predetermined frequency.
>
> Go teaches the consultation cycles between master circuit (50) and slave circuits (10, 20, 30, 40) and acquisition of data stored in the master circuit (50) from the digital processing unit (DP) are carried out cyclically at a predetermined frequency (col. 12, lines 52 – 56; col. 13, lines 1 – 3; col. 23, lines 4 – 12).
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the process of communication between the master

> and the slaves at a predetermined frequency or period of time as taught by Go into the communication of Harris so that the respective communications would be consistent andreliable.

Applicant respectfully traverses these rejections. The key to Applicant's invention, as mentioned above, is providing a data distribution system and data acquisition in packets with a communication protocol that optimizes transmission speed using digital processing units in both the master and slave circuits having two-way communication via a single time-shared communications serial bus. This communication may be either a repetitive or non-repetitive communication frame circulating through the time-shared serial bus formed by a series of bit packets, each separated by a short time interval.

A fair reading of the Harris (US 4,937,811) reference, as mentioned above, discloses a communication network comprising master and slave devices all of which require transformers for each input and output port (see for example, Col. 1, line 50 – Col. 2, line 9; Col. 3, lines 41 -- 64) and a separate twisted pair cabling for each such device (see for example, Col. 2, lines 10 – 12; Col. 4, lines 28 -- 37). This reference also teaches the criticality of both clockwise and counterclockwise data transmission is required to assure continued operation of some slave devices if at least one of said slave devices becomes inoperative (see for example, Col. 2, lines 19 – 25; Col. 4, line 64 – Col. 5, line 18). The Harris (US 4,937,811) reference also requires that the communication have the form of a start-bit, message type-bit, data- bits, CRC-bits, and stop-bit (see for example, Col. 5, line 60 – Col. 6, line 6). There is not teaching of altering the composition of the transmission format within a frame. The Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the use of a common serial bus for connecting the slaves to the master. Clearly, when viewed in this light the Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Hansen (WO 94/26558) reference, as mentioned above, discloses a vehicle communication control system that is preferably located in the middle area of a vehicle to optimize data speed by physically eliminating connection wiring distances from a master to all slaves (see for example, Abstract). This reference teaches the use of a network TREE to eliminate the number of wires required in a traditional vehicle wiring harness (see for example, Page 11, lines 9 – 16). The Hansen (WO

94/26558) reference also teaches that the use of microprocessors is undesirable and therefore provides a method of eliminating them (see for example, Page 13, lines 9 – 12) which also removes the need for an interrupt function required in the Harris (US 4,937,811) reference for example. Clearly, when viewed in this light the Hansen (WO 94/26558) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Go et al. (US 5,305,355) reference discloses a communication system for connecting and controlling multiple audio and/or video devices by means of a master controller in a vehicle wherein each audio or video device operates as a slave to the master controller (see for example, Abstract). The slave and master communicate to determine the slave has been allocated connection address and if not the master allocates a connection address and informs the slave (see for example, Abstract). This is accomplished by connecting both the master and all slaves to a wiring harness within the vehicle. This reference teaches that the slaves must independently of the master send cyclic repetitive connection requests to the master if the first request is not answered (see for example, Col. 2, lines 18 – 32). This requirement for the slave to initiate a request is not required by the Harris (US 4,937,811) reference or the Hansen (WO 94/26558) reference. Without knowing that a cyclic signaling between the master and slaves as well as initiated by the slaves to the master is required there lacks the required impetus in any of the cited references to combine them.

Clearly, when viewed in this light no combination of the Harris (US 4,937,811), Hansen (WO 94/26558) and Go et al. (US 5,305,355) references disclose, teach, or fairly suggest Applicant's claimed invention.

Claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over Harris in view of Hansen as applied to claim 13 above, and further in view of Bottomley (US 6,931,050 B1). Specifically, the Examiner states:

> **Regarding claim 15,** Harris discloses messages having error detection or CRC bits. Harris doesn't explicitly disclose those bit packets (P1, P2, P3, P4) whose transmission has been detected as erroneous by means of said error detection bit (DET) are skipped over, passing to the next bit packets (P1, P2, P3, P4).
>
> Bottomley bit packets (P1, P2, P3, P4) whose transmission has been detected as erroneous by means of

> said error detection bit (DET) are skipped over, passing to the next bit packets (P1, P2, P3, P4) (col. 8, lines 39 – 42).
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to skip over the bit frames when the errir detection bit or scheme indicates errors, and use the process into the communication network or protocol of Harris, this way the data communication would be fast, more efficient, and reliable.

Applicant respectfully traverses these rejections. The key to Applicant's invention, as mentioned above, is providing a data distribution system and data acquisition in packets with a communication protocol that optimizes transmission speed using digital processing units in both the master and slave circuits having two-way communication via a single time-shared communications serial bus. This communication may be either a repetitive or non-repetitive communication frame circulating through the time-shared serial bus formed by a series of bit packets, each separated by a short time interval.

A fair reading of the Harris (US 4,937,811) reference, as mentioned above, discloses a communication network comprising master and slave devices all of which require transformers for each input and output port (see for example, Col. 1, line 50 – Col. 2, line 9; Col. 3, lines 41 -- 64) and a separate twisted pair cabling for each such device (see for example, Col. 2, lines 10 – 12; Col. 4, lines 28 -- 37). This reference also teaches the criticality of both clockwise and counterclockwise data transmission is required to assure continued operation of some slave devices if at least one of said slave devices becomes inoperative (see for example, Col. 2, lines 19 – 25; Col. 4, line 64 – Col. 5, line 18). The Harris (US 4,937,811) reference also requires that the communication have the form of a start-bit, message type-bit, data- bits, CRC-bits, and stop-bit (see for example, Col. 5, line 60 – Col. 6, line 6). There is not teaching of altering the composition of the transmission format within a frame. The Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the use of a common serial bus for connecting the slaves to the master. Clearly, when viewed in this light the Harris (US 4,937,811) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Hansen (WO 94/26558) reference, as mentioned above, discloses a vehicle communication control system that is preferably located in the middle area of a vehicle to optimize data speed by physically eliminating connection wiring

distances from a master to all slaves (see for example, Abstract). This reference teaches the use of a network TREE to eliminate the number of wires required in a traditional vehicle wiring harness (see for example, Page 11, lines 9 – 16). The Hansen (WO 94/26558) reference also teaches that the use of microprocessors is undesirable and therefore provides a method of eliminating them (see for example, Page 13, lines 9 – 12) which also removes the need for an interrupt function required in the Harris (US 4,937,811) reference for example. Clearly, when viewed in this light the Hansen (WO 94/26558) reference does not disclose, teach, or fairly suggest the claimed invention.

A fair reading of the Bottomley (US 6,931,050 B1) reference discloses a wireless digital radio system that utilizes "scale factors" to differentiate radio data signals from several stations having the same strength pilot signal at the receiver (see for example, Col. 3, lines 27 – 49). While this reference does teach the system can be used in a wired system to do so require the use of Rake in all wired schemas (see for example, Col. 4, line 63 – Col 5, line 22). Thus, clearly there is nothing in this reference which provides the necessary impetus to one skilled in the art to select the use of skipping over erroneous transmissions using an error detector bit without first having knowledge of Applicants' claimed invention.

Thus, the Harris (US 4,937,811) reference teaches the critical need of twisted pair connections between each slave device and the master device whereas the Hansen (WO 94/26558) reference teaches away from such individual slave/master connections. The Hansen (WO 94/26558) reference teaches the desirability of eliminating the need for microprocessors whereas the Harris (US 4,937,811) reference requires them. The Bottomley (US 6,931,050 B1) reference teaches the use of a wireless transmission system, or alternatively a wired system requiring the use of Rake. None of these references provide the necessary impetus to combine them or even to look to such varied arts without first having knowledge of Applicants' claimed invention.

Clearly, when viewed in this light no combination of the Harris (US 4,937,811), Hansen (WO 94/26558) and Bottomley (US 6,931,050 B1) references disclose, teach, or fairly suggest Applicant's claimed invention.

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In view of the remarks herein, and the amendments hereto, it is submitted that this application is in condition for allowance, and such action and issuance of a timely Notice of Allowance is respectfully solicited.

Respectfully submitted,

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